



# SEQUENCE LISTING

<110> Connelly, Mariah  
Brody, Howard

<120> Methods For Producing Biological Substances In Enzyme-Deficient  
Mutants Of Aspergillus Niger

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<140> 10/815,495

<141> 2004-03-31

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<170> PatentIn version 3.4

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Val Leu Gln Thr Ser Arg Leu Ile Ile Ser Arg Phe Leu Gln Ile Arg  
 485 490 495

Tyr Ser Thr Ala Leu Ser Leu Val Asp Gln Val Tyr Phe Ile Val Gly  
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Tyr Ala Ala Leu Asn Leu Cys Asp Phe Asn Leu Met Asp Pro Leu Ile  
 515 520 525

Glu Gln Val Gln Met Phe Leu Leu His Leu Ser Pro Asn Glu Asp His  
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Ile Ala Tyr Arg Phe Ser Cys Met Val Ala Glu Phe Lys Arg Arg Cys  
 545 550 555 560

Gly Ser Ala Glu Cys Asn Asp Pro Ser Ser Thr Val Lys Gly Ser Pro  
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Leu Ser Ser Tyr Gly Asp Ser Arg Lys Met Ser Met Gly Gln Ala Pro  
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Phe Met Pro Pro Leu Met Asp Gly Met Ile Glu Gly Tyr Gly Phe Glu  
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Gln Leu Met Pro Glu Val Met Pro Ser Ser Phe Pro Asp Gly Ile Leu  
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Asn Gly Met Pro Val Thr Gly Leu Ala Ala Tyr Arg Ser Ala Thr Leu  
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Ser Ser Asn Thr Arg Asp Asp Asn Leu Gln Arg Trp Phe Ser Ser Cys  
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<213> Aspergillus niger

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<210> 17  
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<223> n=a,c,g or t

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<212> PRT  
<213> Aspergillus niger

<400> 18

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Tyr Phe Leu Leu Thr Asp Arg Phe Ala Arg Thr Asp Gly Ser Thr Thr  
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Ala Thr Cys Asn Thr Ala Asp Gln Lys Tyr Cys Gly Gly Thr Trp Gln  
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Gly Ile Ile Asp Lys Leu Asp Tyr Ile Gln Gly Met Gly Phe Thr Ala  
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Ile Trp Ile Thr Pro Val Thr Ala Gln Leu Pro Gln Thr Thr Ala Tyr  
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Gly Asp Ala Tyr His Gly Tyr Trp Gln Gln Asp Ile Tyr Ser Leu Asn  
100 105 110

Glu Asn Tyr Gly Thr Ala Asp Asp Leu Lys Ala Leu Ser Ser Ala Leu  
 115 120 125

His Glu Arg Gly Met Tyr Leu Met Val Asp Val Val Ala Asn His Met  
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Gly Tyr Asp Gly Ala Gly Ser Ser Val Asp Tyr Ser Val Phe Lys Pro  
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Phe Ser Ser Gln Asp Tyr Phe His Pro Phe Cys Phe Ile Gln Asn Tyr  
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Glu Asp Gln Thr Gln Val Glu Asp Cys Trp Leu Gly Asp Asn Thr Val  
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Ser Leu Pro Asp Leu Asp Thr Thr Lys Asp Val Val Lys Asn Glu Trp  
 195 200 205

Tyr Asp Trp Val Gly Ser Leu Val Ser Asn Tyr Ser Ile Asp Gly Leu  
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Arg Ile Asp Thr Val Lys His Val Gln Lys Asp Phe Trp Pro Gly Tyr  
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Asn Lys Ala Ala Gly Val Tyr Cys Ile Gly Glu Val Leu Asp Gly Asp  
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Pro Ala Tyr Thr Cys Pro Tyr Gln Asn Val Met Asp Gly Val Leu Asn  
 260 265 270

Tyr Pro Ile Tyr Tyr Pro Leu Leu Asn Ala Phe Lys Ser Thr Ser Gly  
 275 280 285

Ser Met Asp Asp Leu Tyr Asn Met Ile Asn Thr Val Lys Ser Asp Cys  
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Pro Asp Ser Thr Leu Leu Gly Thr Phe Val Glu Asn His Asp Asn Pro  
 305 310 315 320

Arg Phe Ala Ser Tyr Thr Asn Asp Ile Ala Leu Ala Lys Asn Val Ala  
 325 330 335

Ala Phe Ile Ile Leu Asn Asp Gly Ile Pro Ile Ile Tyr Ala Gly Gln  
340 345 350

Glu Gln His Tyr Ala Gly Gly Asn Asp Pro Ala Asn Arg Glu Ala Thr  
355 360 365

Trp Leu Ser Gly Tyr Pro Thr Asp Ser Glu Leu Tyr Lys Leu Ile Ala  
370 375 380

Ser Arg Asn Ala Ile Arg Asn Tyr Ala Ile Ser Lys Asp Thr Gly Phe  
385 390 395 400

Val Thr Tyr Lys Asn Trp Pro Ile Tyr Lys Asp Asp Thr Thr Ile Pro  
405 410 415

Met Arg Lys Gly Thr Asp Gly Ser Gln Ile Val Thr Ile Leu Ser Asn  
420 425 430

Lys Gly Ala Ser Gly Asp Ser Tyr Thr Leu Ser Leu Ser Gly Ala Gly  
435 440 445

Tyr Thr Ala Gly Gln Gln Leu Thr Glu Val Ile Gly Cys Thr Thr Val  
450 455 460

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21

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<213> Aspergillus niger

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21

<210> 21

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 <213> *Aspergillus niger*

<400> 22

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Tyr Phe Leu Leu Thr Asp Arg Phe Ala Arg Thr Asp Gly Ser Thr Thr  
35 40 45

Ala Thr Cys Asn Thr Ala Asp Gln Lys Tyr Cys Gly Gly Thr Trp Gln  
50 55 60

Gly Ile Ile Asp Lys Leu Asp Tyr Ile Gln Gly Met Gly Phe Thr Ala  
65 70 75 80

Ile Trp Ile Thr Pro Val Thr Ala Gln Leu Pro Gln Thr Thr Ala Tyr  
85 90 95

Gly Asp Ala Tyr His Gly Tyr Trp Gln Gln Asp Ile Tyr Ser Leu Asn  
100 105 110

Glu Asn Tyr Gly Thr Ala Asp Asp Leu Lys Ala Leu Ser Ser Ala Leu  
115 120 125

His Glu Arg Gly Met Tyr Leu Met Val Asp Val Val Ala Asn His Met  
130 135 140

Gly Tyr Asp Gly Ala Gly Ser Ser Val Asp Tyr Ser Val Phe Lys Pro  
145 150 155 160

Phe Ser Ser Gln Asp Tyr Phe His Pro Phe Cys Phe Ile Gln Asn Tyr  
165 170 175

Glu Asp Gln Thr Gln Val Glu Asp Cys Trp Leu Gly Asp Asn Thr Val  
180 185 190

Ser Leu Pro Asp Leu Asp Thr Thr Lys Asp Val Val Lys Asn Glu Trp  
195 200 205

Tyr Asp Trp Val Gly Ser Leu Val Ser Asn Tyr Ser Ile Asp Gly Leu  
210 215 220

Arg Ile Asp Thr Val Lys His Val Gln Lys Asp Phe Trp Pro Gly Tyr  
 225 230 235 240

Asn Lys Ala Ala Gly Val Tyr Cys Ile Gly Glu Val Leu Asp Gly Asp  
 245 250 255

Pro Ala Tyr Thr Cys Pro Tyr Gln Asn Val Met Asp Gly Val Leu Asn  
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Tyr Pro Ile Tyr Tyr Pro Leu Leu Asn Ala Phe Lys Ser Thr Ser Gly  
 275 280 285

Ser Met Asp Asp Leu Tyr Asn Met Ile Asn Thr Val Lys Ser Asp Cys  
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Pro Asp Ser Thr Leu Leu Gly Thr Phe Val Glu Asn His Asp Asn Pro  
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Arg Phe Ala Ser Tyr Thr Asn Asp Ile Ala Leu Ala Lys Asn Val Ala  
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Ala Phe Ile Ile Leu Asn Asp Gly Ile Pro Ile Ile Tyr Ala Gly Gln  
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Glu Gln His Tyr Ala Gly Gly Asn Asp Pro Ala Asn Arg Glu Ala Thr  
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Trp Leu Ser Gly Tyr Pro Thr Asp Ser Glu Leu Tyr Lys Leu Ile Ala  
 370 375 380

Ser Arg Asn Ala Ile Arg Asn Tyr Ala Ile Ser Lys Asp Thr Gly Phe  
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Val Thr Tyr Lys Asn Trp Pro Ile Tyr Lys Asp Asp Thr Thr Ile Pro  
 405 410 415

Met Arg Lys Gly Thr Asp Gly Ser Gln Ile Val Thr Ile Leu Ser Asn  
 420 425 430

Lys Gly Ala Ser Gly Asp Ser Tyr Thr Leu Ser Leu Ser Gly Ala Gly  
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Tyr Thr Ala Gly Gln Gln Leu Thr Glu Val Ile Gly Cys Thr Thr Val  
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Tyr Gly

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Ala Arg Gln Glu Pro Val Val Asn Leu Asn Met Val Thr Gly Ala Ser
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Lys Leu Arg Lys Gln Leu Arg Glu Thr Asn Glu Leu Leu Val Cys Pro  
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Gly Val Tyr Asp Gly Leu Ser Ala Arg Ile Ala Ile Asn Leu Gly Phe  
65 70 75 80

Lys Gly Met Tyr Met Thr Gly Ala Gly Thr Thr Ala Ser Arg Leu Gly  
85 90 95

Met Ala Asp Leu Gly Leu Ala His Ile Tyr Asp Met Lys Thr Asn Ala  
100 105 110

Glu Met Ile Ala Asn Leu Asp Pro Tyr Gly Pro Pro Leu Ile Ala Asp  
115 120 125

Met Asp Thr Gly Tyr Gly Gly Pro Leu Met Val Ala Arg Ser Val Gln  
130 135 140

Gln Tyr Ile Gln Ala Gly Val Ala Gly Phe His Ile Glu Asp Gln Ile  
145 150 155 160

Gln Asn Lys Arg Cys Gly His Leu Ala Gly Lys Arg Val Val Thr Met  
165 170 175

Asp Glu Tyr Leu Thr Arg Ile Arg Ala Ala Lys Leu Thr Lys Asp Arg  
180 185 190

Leu Arg Ser Asp Ile Val Leu Ile Ala Arg Thr Asp Ala Leu Gln Gln  
195 200 205

His Gly Tyr Asp Glu Cys Ile Arg Arg Leu Lys Ala Ala Arg Asp Leu  
210 215 220

Gly Ala Asp Val Gly Leu Leu Glu Gly Phe Thr Ser Lys Glu Met Ala  
225 230 235 240

Arg Arg Cys Val Gln Asp Leu Ala Pro Trp Pro Leu Leu Leu Asn Met  
245 250 255

Val Glu Asn Gly Ala Gly Pro Val Ile Ser Val Asp Glu Ala Arg Glu  
260 265 270

Met Gly Phe Arg Ile Met Ile Phe Ser Phe Ala Cys Ile Thr Pro Ala  
 275 280 285

Tyr Met Gly Ile Thr Ala Ala Leu Glu Arg Leu Lys Lys Asp Gly Val  
 290 295 300

Val Gly Leu Pro Glu Gly Met Gly Pro Lys Lys Leu Phe Glu Val Cys  
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Gly Leu Met Asp Ser Val Arg Val Asp Thr Glu Ala Gly Gly Asp Gly  
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Phe Ala Asn Gly Val  
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<210> 27  
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 cgcaagggtgc ccacggacat cggcaacgcc aacaacgctg cgtcgttcca gctgcagtac 240  
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<211> 462  
<212> PRT  
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Ala Leu Pro Asn Pro Tyr Asp Asp Pro Phe Tyr Thr Thr Pro Ser Asn  
35 40 45

Ile Gly Thr Phe Ala Lys Gly Gln Val Ile Gln Ser Arg Lys Val Pro  
50 55 60

Thr Asp Ile Gly Asn Ala Asn Asn Ala Ala Ser Phe Gln Leu Gln Tyr  
65 70 75 80

Arg Thr Thr Asn Thr Gln Asn Glu Ala Val Ala Asp Val Ala Thr Val  
85 90 95

Trp Ile Pro Ala Lys Pro Ala Ser Pro Pro Lys Ile Phe Ser Tyr Gln  
100 105 110

Val Tyr Glu Asp Ala Thr Ala Leu Asp Cys Ala Pro Ser Tyr Ser Tyr  
115 120 125

Leu Thr Gly Leu Asp Gln Pro Asn Lys Val Thr Ala Val Leu Asp Thr  
130 135 140

Pro Ile Ile Ile Gly Trp Ala Leu Gln Gln Gly Tyr Tyr Val Val Ser  
145 150 155 160

Ser Asp His Glu Gly Phe Lys Ala Ala Phe Ile Ala Gly Tyr Glu Glu  
165 170 175

Gly Met Ala Ile Leu Asp Gly Ile Arg Ala Leu Lys Asn Tyr Gln Asn  
180 185 190

Leu Pro Ser Asp Ser Lys Val Ala Leu Glu Gly Tyr Ser Gly Gly Ala  
195 200 205

His Ala Thr Val Trp Ala Thr Ser Leu Ala Glu Ser Tyr Ala Pro Glu  
210 215 220

Leu Asn Ile Val Gly Ala Ser His Gly Gly Thr Pro Val Ser Ala Lys  
225 230 235 240

Asp Thr Phe Thr Phe Leu Asn Gly Gly Pro Phe Ala Gly Phe Ala Leu  
245 250 255

Ala Gly Val Ser Gly Leu Ser Leu Ala His Pro Asp Met Glu Ser Phe  
260 265 270

Ile Glu Ala Arg Leu Asn Ala Lys Gly Gln Arg Thr Leu Lys Gln Ile  
275 280 285

Arg Gly Arg Gly Phe Cys Leu Pro Gln Val Val Leu Thr Tyr Pro Phe  
290 295 300

Leu Asn Val Phe Ser Leu Val Asn Asp Thr Asn Leu Leu Asn Glu Ala  
305 310 315 320

Pro Ile Ala Ser Ile Leu Lys Gln Glu Thr Val Val Gln Ala Glu Ala  
325 330 335

Ser Tyr Thr Val Ser Val Pro Lys Phe Pro Arg Phe Ile Trp His Ala  
340 345 350

Ile Pro Asp Glu Ile Val Pro Tyr Gln Pro Ala Ala Thr Tyr Val Lys  
355 360 365

Glu Gln Cys Ala Lys Gly Ala Asn Ile Asn Phe Ser Pro Tyr Pro Ile  
370 375 380

Ala Glu His Leu Thr Ala Glu Ile Phe Gly Leu Val Pro Ser Leu Trp  
385 390 395 400

Phe Ile Lys Gln Ala Phe Asp Gly Thr Thr Pro Lys Val Ile Cys Gly  
405 410 415

Thr Pro Ile Pro Ala Ile Ala Gly Ile Thr Thr Pro Ser Ala Asp Gln  
420 425 430

Val Leu Gly Ser Asp Leu Ala Asn Gln Leu Arg Ser Leu Asp Gly Lys  
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<211> 2794

<212> DNA

<213> *Scytalidium thermophilum*

<400> 29

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<210> 30

<211> 717

<212> PRT

<213> *Scytalidium thermophilum*

<400> 30

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			20					25					30		

Gln Asp Thr Thr Ser Gly Gln Ser Pro Leu Ala Ala Tyr Glu Val Asp  
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Asp Ser Thr Gly Tyr Leu Thr Ser Asp Val Gly Gly Pro Ile Gln Asp  
 50 55 60

Gln Thr Ser Leu Lys Ala Gly Ile Arg Gly Pro Thr Leu Leu Glu Asp  
 65 70 75 80

Phe Met Phe Arg Gln Lys Ile Gln His Phe Asp His Glu Arg Val Pro  
 85 90 95

Glu Arg Ala Val His Ala Arg Gly Ala Gly Ala His Gly Thr Phe Thr  
 100 105 110

Ser Tyr Ala Asp Trp Ser Asn Ile Thr Ala Ala Ser Phe Leu Asn Ala  
 115 120 125

Thr Gly Lys Gln Thr Pro Val Phe Val Arg Phe Ser Thr Val Ala Gly  
 130 135 140

Ser Arg Gly Ser Ala Asp Thr Ala Arg Asp Val His Gly Phe Ala Thr  
 145 150 155 160

Arg Phe Tyr Thr Asp Glu Gly Asn Phe Asp Ile Val Gly Asn Asn Ile  
 165 170 175

Pro Val Phe Phe Ile Gln Asp Ala Ile Gln Phe Pro Asp Leu Ile His  
 180 185 190

Ser Val Lys Pro Arg Pro Asp Asn Glu Ile Pro Gln Ala Ala Thr Ala  
 195 200 205

His Asp Ser Ala Trp Asp Phe Phe Ser Gln Gln Pro Ser Thr Met His  
 210 215 220

Thr Leu Phe Trp Ala Met Ser Gly His Gly Ile Pro Arg Ser Tyr Arg  
 225 230 235 240

His Met Asp Gly Phe Gly Val His Thr Phe Arg Phe Val Lys Asp Asp  
 245 250 255

Gly Ser Ser Lys Leu Ile Lys Trp His Phe Lys Ser Arg Gln Gly Lys  
 260 265 270

Ala Ser Leu Val Trp Glu Glu Ala Gln Val Leu Ser Gly Lys Asn Ala  
 275 280 285

Asp Phe His Arg Gln Asp Leu Trp Asp Ala Ile Glu Ser Gly Asn Gly  
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Pro Glu Trp Asp Val Cys Val Gln Ile Val Asp Glu Ser Gln Ala Gln  
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Ala Phe Gly Phe Asp Leu Leu Asp Pro Thr Lys Ile Ile Pro Glu Glu  
 325 330 335

Tyr Ala Pro Leu Thr Lys Leu Gly Leu Leu Lys Leu Asp Arg Asn Pro  
 340 345 350

Thr Asn Tyr Phe Ala Glu Thr Glu Gln Val Met Phe Gln Pro Gly His  
 355 360 365

Ile Val Arg Gly Ile Asp Phe Thr Glu Asp Pro Leu Leu Gln Gly Arg  
 370 375 380

Leu Phe Ser Tyr Leu Asp Thr Gln Leu Asn Arg Asn Gly Gly Pro Asn  
 385 390 395 400

Phe Glu Gln Leu Pro Ile Asn Met Pro Arg Val Pro Ile His Asn Asn  
 405 410 415

Asn Arg Asp Gly Ala Gly Gln Met Phe Ile His Arg Asn Lys Tyr Pro  
 420 425 430

Tyr Thr Pro Asn Thr Leu Asn Ser Gly Tyr Pro Arg Gln Ala Asn Gln  
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Asn Ala Gly Arg Gly Phe Phe Thr Ala Pro Gly Arg Thr Ala Ser Gly  
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Ala Leu Val Arg Glu Val Ser Pro Thr Phe Asn Asp His Trp Ser Gln  
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Pro Arg Leu Phe Phe Asn Ser Leu Thr Pro Val Glu Gln Gln Phe Leu  
485 490 495

Val Asn Ala Met Arg Phe Glu Ile Ser Leu Val Lys Ser Glu Glu Val  
500 505 510

Lys Lys Asn Val Leu Thr Gln Leu Asn Arg Val Ser His Asp Val Ala  
515 520 525

Val Arg Val Ala Ala Ala Ile Gly Leu Gly Ala Pro Asp Ala Asp Asp  
530 535 540

Thr Tyr Tyr His Asn Asn Lys Thr Ala Gly Val Ser Ile Val Gly Ser  
545 550 555 560

Gly Pro Leu Pro Thr Ile Lys Thr Leu Arg Val Gly Ile Leu Ala Thr  
565 570 575

Thr Ser Glu Ser Ser Ala Leu Asp Gln Ala Ala Gln Leu Arg Thr Arg  
580 585 590

Leu Glu Lys Asp Gly Leu Val Val Thr Val Val Ala Glu Thr Leu Arg  
595 600 605

Glu Gly Val Asp Gln Thr Tyr Ser Thr Ala Asp Ala Thr Gly Phe Asp  
610 615 620

Gly Val Val Val Val Asp Gly Ala Ala Ala Leu Phe Ala Ser Thr Ala  
625 630 635 640

Ser Ser Pro Leu Phe Pro Thr Gly Arg Pro Leu Gln Ile Phe Val Asp  
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Ala Tyr Arg Trp Gly Lys Pro Val Gly Val Cys Gly Gly Lys Ser Ser  
660 665 670

Glu Val Leu Asp Ala Ala Asp Val Pro Glu Asp Gly Asp Gly Val Tyr  
675 680 685

Ser Glu Glu Ser Val Asp Met Phe Val Glu Glu Phe Glu Lys Gly Leu  
690 695 700

Ala Thr Phe Arg Phe Thr Asp Arg Phe Ala Leu Asp Ser  
705 710 715